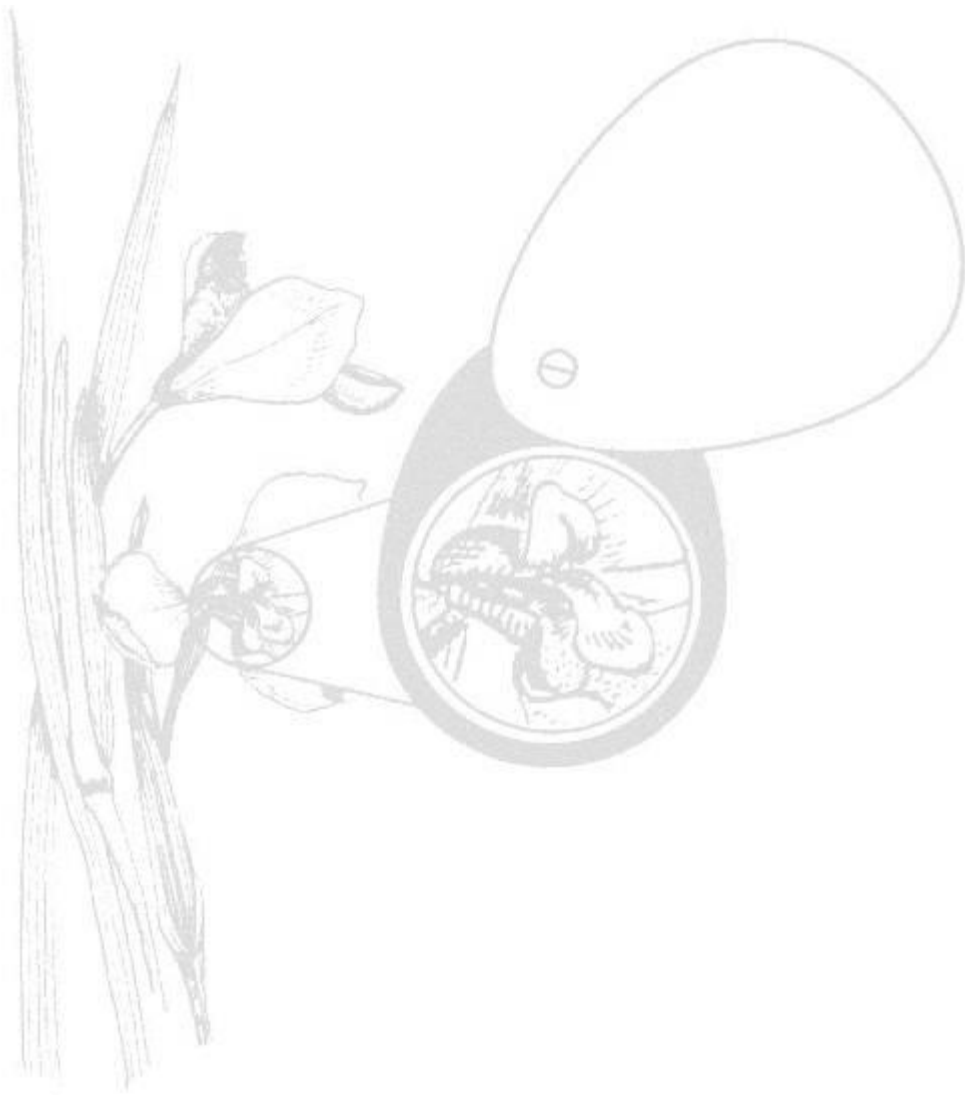


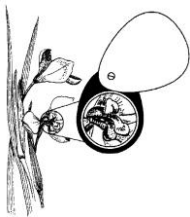


**Request for Additional Information for 38-Lot Subdivision
EPBC 2022/09828**

Ecclestone Road subdivision

Natural Values Assessment
8th June 2023





North Barker Ecosystem Services Pty Ltd 2023.

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1. BACKGROUND

A planning permit for a 38-lot subdivision at Ecclestone Road in Riverside was granted by the West Tamar Council to the proponent in June 2021. The decision to grant the permit was appealed, and a hearing with the Tasmanian Civil and Administrative tribunal was conducted. The tribunal amended conditions on the development planning permit, and the amended permit was granted in December 2021. Subsequently, the project was voluntarily referred to DCCEEW in May 2022 and an RFI was received on September 14, 2022, requiring the following:

Tasmanian Wedge-tailed Eagle (*Aquila audax fleayi*)

- An assessment of the likelihood that the Wedge-tailed Eagle nest is active, with reference to the Forest Practices Authority's Fauna Technical Note No. 1 — Eagle nest searching, activity checking and nest management and the department's Survey Guidelines for Australia's Threatened Birds, EPBC Act Survey Guidelines 6.2
- An assessment of potential impacts to the Tasmanian Wedge-tailed Eagle as a result of the construction as well as the operation of the proposed development
- A viewshed analysis for the eagle nest and its usage, clearing depicting visibility of existing roads and dwellings, and the proposed 38-Lot Subdivision

Masked Owl

- Information to support the presence or absence of Masked Owl (Tasmanian) (*Tyto novaehollandiae castanops* (Tasmanian population)), using surveys in accordance with the department's Survey Guidelines for Australia's Threatened Birds, EPBC Act survey guidelines 6.2

Traffic

A comprehensive assessment of potential traffic impacts on the following species:

- Tasmanian Devil (*Sarcophilus harrisii*)
- Eastern Quoll (*Dasyurus viverrinus*)
- Eastern Barred Bandicoot (Tasmanian) (*Perameles gunnii gunnii*)
- Spotted-tail Quoll (Tasmanian) (*Dasyurus maculatus maculatus* (Tasmanian population))

Avoidance and mitigation

- Proposed avoidance and mitigation measures to manage impacts to the Tasmanian Wedge-tailed Eagle, Masked Owl, Tasmanian Devil, Eastern Quoll, Eastern Barred Bandicoot, and Spotted-tailed Quoll, including further details of those measures referenced in section 4.1.4.10 of the Referral.

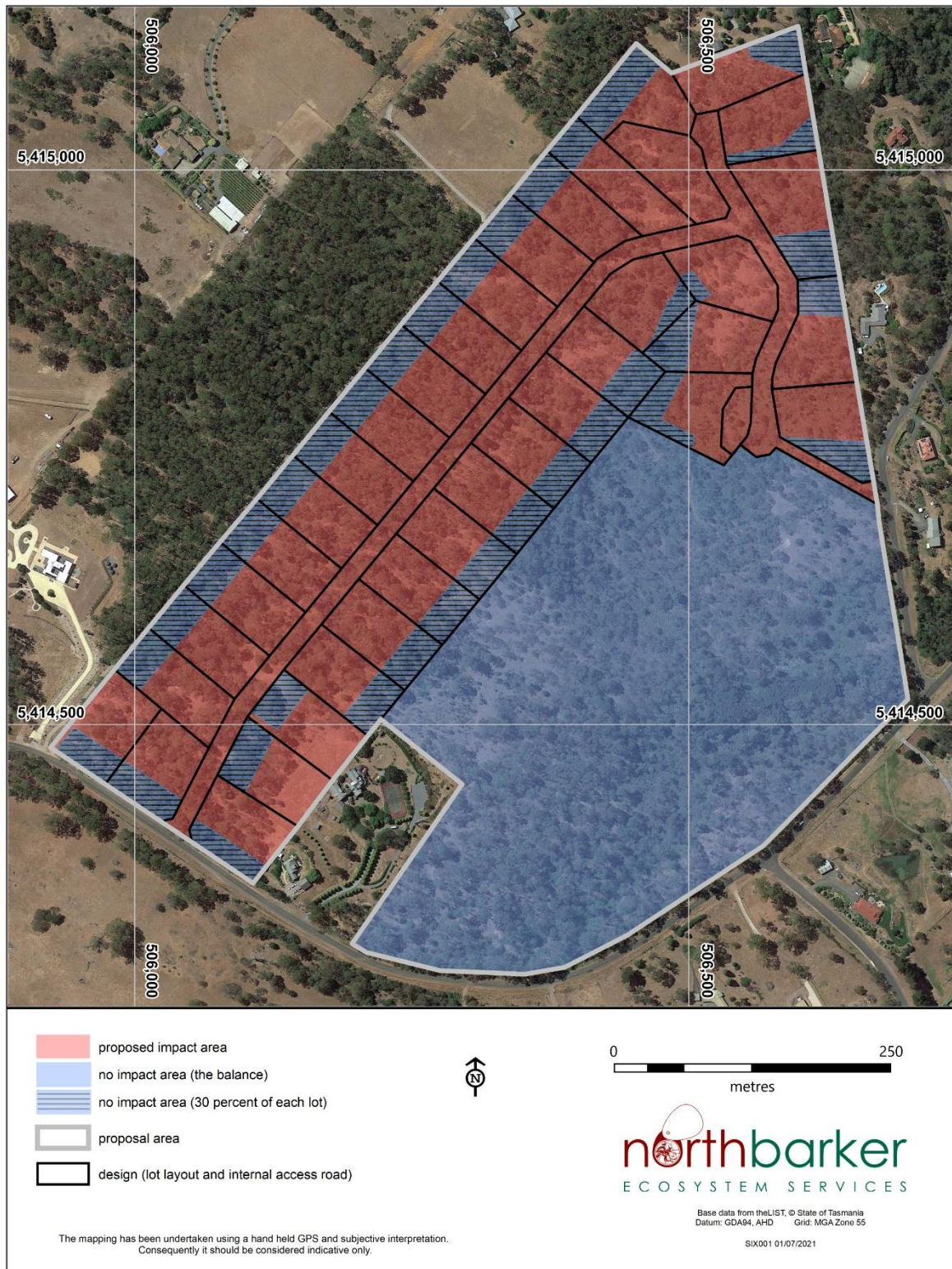


Figure 1 illustrates the layout of the residential lots and the balance of land and shows the land that is to be protected on each lot.

The following information is set out under each of the RFI dot points and draws from information reported in:

Attachment 1 NBES Natural Values Assessment 2022.

Attachment 2 Ecclestone Rd Subdivision – Wedge-tailed-eagle nest and masked owl RFI assessment.

Attachment 3 Traffic Assessment.

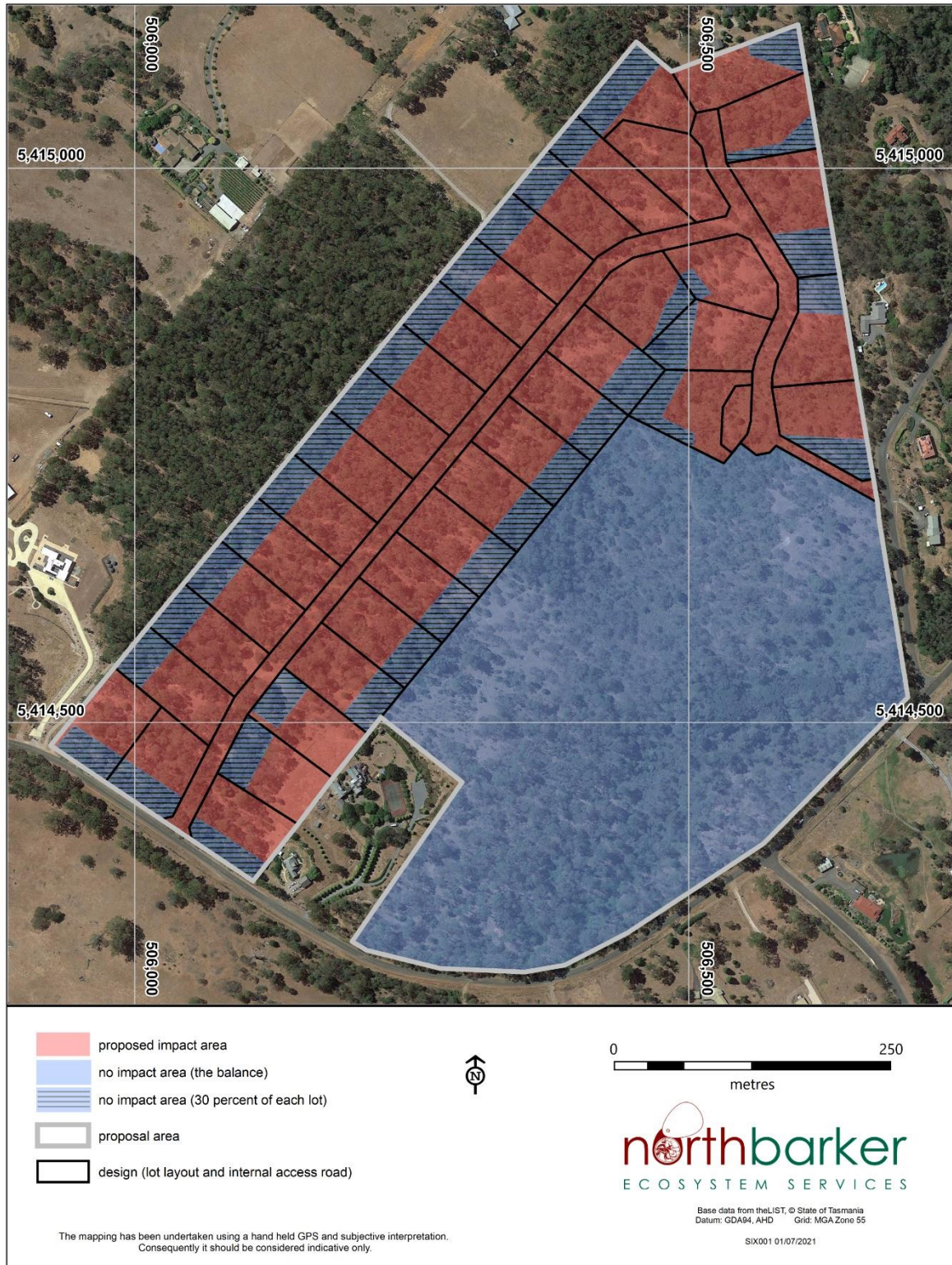


Figure 1. The layout of residential lots, the balance of land and the areas to be protected from development.

2. TASMANIAN WEDGE-TAILED EAGLE (*Aquila audax fleayi*)

An assessment of the likelihood that the Wedge-tailed Eagle nest is active, with reference to the Forest Practices Authority's Fauna Technical Note No. 1 — Eagle nest searching, activity checking and nest management and the department's Survey Guidelines for Australia's Threatened Birds, EPBC Act Survey Guidelines 6.2

A wedge-tailed eagle (*Aquila audax fleayi*) nest was identified in the balance area (506443 E, 5414498 N) in late 2019 (Avoidance and Mitigation)

Proposed avoidance and mitigation measures to manage impacts to the Tasmanian Wedge-tailed Eagle, Masked Owl, Tasmanian Devil, Eastern Quoll, Eastern Barred Bandicoot, and Spotted-tailed Quoll, including further details of those measures referenced in section 4.1.4.10 of the referral.

Avoidance

Wedge-tailed eagle - The wedge-tailed eagle nest is not active and likely never has been and may never will be utilised and so there is no impact anticipated.

As there would be no residual impact there would be no significant impact and an offset isn't required.

Mammals - Thirty percent of each residential lot and 90% of the balance lot will be retained and protected under a Part 5 Agreement with the council. This provides a minimum 57% retention of habitat (21 of 37 ha) which is an outstanding outcome for residential subdivision.

This level of retention will allow the site to continue as viable wildlife habitat.

The following elements inside text boxes were provided in the referral. In some cases these prescriptions will be modified due to further information being available.

Tasmanian devil and quolls

Car strikes - Mitigation against an increase in car strikes can be achieved through speed control but the efficacy on Ecclestone Road is not known. Reduced traffic speed is an effective measure in mitigating roadkill due to existing traffic and can be done using speed humps on the new proposed road or road limits. Additional local traffic such as generated by the proposal is likely to travel slower than the existing through traffic.

Den protection - Although no dens were located in the proposed impact area these can be difficult to locate. The following mitigation for this species is based upon the Natural and Cultural Heritage Division 2015 *Survey Guidelines and Management Advice for Development Proposals that may impact on the Tasmanian Devil (Sarcophilus harrisi)* and should include:

- a dedicated pre-clearance survey for dens in line with state guidelines.
- a 50 m exclusion zone around potential dens that warrant an assessment.
- A den assessments that includes a combination of expert inspection and camera monitoring.
- Den decommissioning (if applicable for nonactive dens) to reduce direct impact on devils. This will require a permit under the *Nature Conservation Act 2002*.
- Den monitoring (if applicable for active dens) to determine use of den (*i.e.* use of other species such as wombats, use of pouch-laden devils, use of shelter for adult devils).

Minimisation

Car strikes (Roadkill)

The traffic study summarised above demonstrates and substantial increase in traffic. However, it predicts that 90% of the traffic will be during the peak hrs. The peak hrs are outside of the high risk period except during the evening peak during winter between 5 and 6 pm.

Speed control – the Part 5 Agreement will include information on animal protection. In this case it will provide information on the risk of roadkill and the mitigating factors. This will include high risk times, speed and visibility and caution.

Wildlife warning signs will be placed at each end of the site on Ecclestone Road to alert all road users including existing users. It is anticipated that this will modify the behaviour of existing road users and so reduce the risk and incidence of roadkill.

The roadside vegetation will be maintained at a low height in the road reserve between the seal and the boundary fence to improve visibility of animals to all road users.

Council is party to the development of the subdivision and the Part 5 Agreement will include reference to the councils commitment to the collection of roadkill of all animals to minimise the risk of scavenging carcasses attracting devils and quolls and so leading to animals being killed.

With mitigation through the provision of information and the practical elements above the risk from the local traffic will be minimal. This mitigation will also influence the existing drivers and so may generate a net reduction in roadkill events along this section of road.

Offset

As there would be no residual impact there would be no significant impact and an offset isn't required.

Den protection

Den searches are undertaken along notionally parallel transects at a maximum of 30 m apart. All structures potentially suitable for dens are inspected and potential dens recorded. All potential dens in the impact area are photo monitored for activity. All dens on the reserved land will be protected. The probability of den occurrence is highest in the land to be protected on the balance lot due to its greater vegetative cover and structures for den opportunities.

Den decommissioning - Where a den is required to be decommissioned it is first monitored with cameras for 1 week. This will indicate if the den is in use by a devil or any other fauna. For dens that have an breeding female devil or other fauna evidenced by repeated observations it will be assumed to be a natal den and the den will be protected with a 50 m buffer until the activity ceases. Once breeding activity ceases a one way gate will be fitted and monitored until all fauna have left the den and cannot re-enter. The den will only then be decommissioned.

Education and regulation

The retention area will have a Part 5 Agreement on title. The Part 5 Agreement will have an attendant management plan; The management plan will emphasise the importance of the retention area and detail land owner obligations and provide information in relation to:

- Habitat protection
- Fire management
- Weed management
- Pest control
- Cat and dog control
- Animal identification

Eastern Barred Bandicoot

The development will not have a significant direct impact on this species, although the increase in houses may result in an increase in dogs and cats.

- Signage around the retention area should be erected to state the importance of retention area as a 'wildlife refuge' for the above species with emphasis on keeping cats and dogs confined to their properties.

- The retention area should have a 'no dogs allowed' sign

Masked owl

Avoidance - All hollow bearing trees that occur in the protected areas or outside of building areas will be retained. This is a minimum of 5 of 6 trees.

Minimisation - The sixth hollow bearing tree may need to be removed due to its location on or near the proposed road. It will be inspected by an owl nest expert before clearance. If the hollow is not a

nesting hollow it will be covered and the tree removed. If it is a nest tree it will be protected (after examination on 3 occasions there is no sign evidence that the tree is a nest tree).

Information on the protection of masked owls by controlling the use of rodent poisons will be included in the Management plan attendant to the Part 5 Agreement.

These avoidance and mitigation actions supplement those reported in the referral (below)

Tasmanian masked owl

The site is suitable for masked owl and six trees with hollows potentially suitable for masked owl were recorded in the proposal area. Of these trees, one is in the proposed development impact area. To manage any potential risk to the species this tree should be:

- buffered with a 50 m exclusion zone.
- if this cannot be achieved, then all hollows should be checked for nests prior to removal.
- trees with active nests must be protected with a 50 m exclusion zone and realignment should be proposed.
- tree hollows without nests must be blocked prior to removal.
- New homeowners should be given a letter box drop with information discussing the impacts of baiting rodents on owls and other raptor species

Offset

As no nest is present there will be no significant impact and an offset isn't required.

Attachment 1)

During the 2019 breeding season the nest was determined as being inactive. The nest has almost certainly never been used by eagles evidenced by its structure and condition.

The nest location is well known and so no aerial nest search technique was required to relocate it. It was relocated in November 2022 by ground based search which is consistent with the FPA Technote 1 and the Australia's Threatened Birds, EPBC Act Survey Guidelines 6.2 (Attachment 2)

Because it has not known to ever have been active and considering the circumstances of the RFI being requested in September 2022, (which is early in the 7 month breeding season in which nest observations are normally excluded) it was deemed reasonable to observe the nest from the ground in November 2022.

The nest was viewed by 1 ecologist to minimise the risk of disturbance. It was first observed from more than 100 m and then within 100 m for 2.5 hrs on November 2nd and 3.75 hrs on the 3rd. No wedge-tailed eagle activity was observed during nest monitoring.

Closer observation of the nest tree found no evidence of utilisation by eagles. A brown falcon was observed at the nest and may well have been utilising it.

A viewshed analysis for the eagle nest and its usage, clearing depicting visibility of existing roads and dwellings, and the proposed 38-Lot Subdivision

Figure 2 below illustrates the view shed of the land surface without vegetation and the view of buildings in the development with the retained vegetation. It shows that a few building in the north will be visible. These are more than 300 m from the eagle nest.

An assessment of potential impacts to the Tasmanian Wedge-tailed Eagle as a result of the construction as well as the operation of the proposed subdivision

The nest has never been known to be active. It is unlikely that the nest has ever been used for breeding. It is possible that the nest was an attempt by subadults to establish a nest and never utilised. It is likely that the nest has been utilised by brown falcons that were observed in the same tree.

The lack of evidence of utilisation by eagles suggests that that there will be no impact to the wedge-tailed eagle as a result of the subdivision and works.

The progression of the development over time may mean it is increasingly less likely that the nest will be utilised as time passes.

If the nest were ever to be utilised it would be in the context of works proceeding on the site and as such a "choice" by the breeding pair to utilise the nest despite the development. Successful eagle nests are known elsewhere in similar circumstances whereby eagle nests are within 300 m line of sight of residential developments.

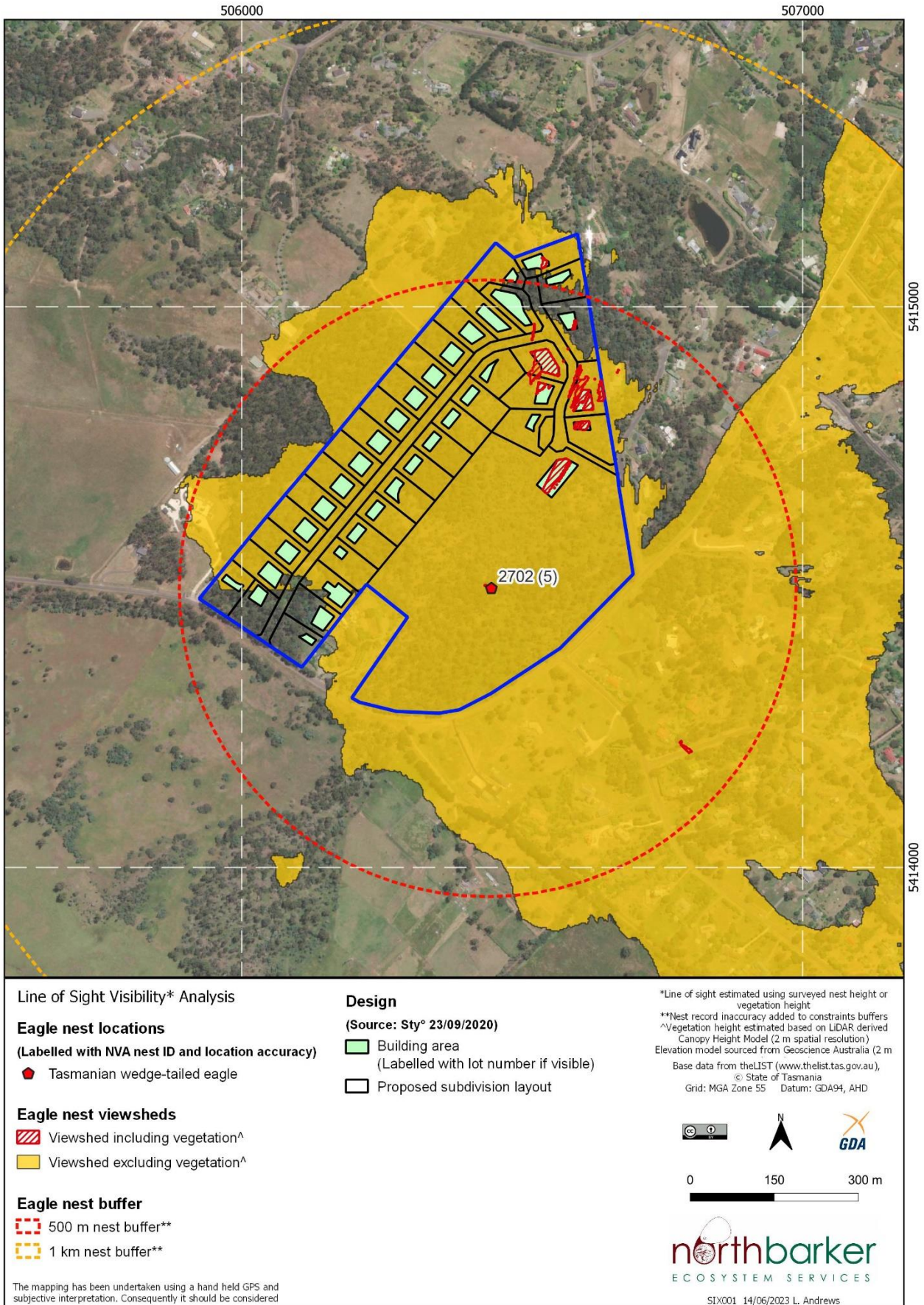


Figure 2. The extent of viewshed from the eagle nest with and without vegetative cover and the location of masked owl surveys and hollow trees.

3. TASMANIAN MASKED OWL (*Tyto novaehollandiae castanops*)

The potential for the site to support breeding masked owls was also further investigated in the context of the following RFI requirements.

Information to support the presence or absence of Masked Owl (Tasmanian) (*Tyto novaehollandiae castanops* (Tasmanian population), using surveys in accordance with the department's Survey Guidelines for Australia's Threatened Birds, EPBC Act survey guidelines 6.2

The core habitat of the masked owl is widespread in Tasmania and includes the south, east north and west of the state. The significant habitat is described by the Forest Practices Authority dry forest in the core range¹. Within this part of the range masked owl territories are common and may be in the area of 1000 ha depending on the site productivity. However, nesting and foraging can be confined to small areas within the territory that are most productive for hunting or best suited to nesting. The subdivision is within core habitat and is dry forest.

4. ~~FAVOURED NEST TREES ARE LARGE WITH LARGE HOLLOW TYPICALLY THE HOLLOW ENTRANCE IS GREATER THAN 50 CM BUT MUST ALSO GIVE ACCESS TO ANESTING CHAMBER LARGE ENOUGH TO SUPPORT THE ADULT OWL AND FLEDGLINGS. TYPICALLY TREES SUPPORTING NESTS ARE GREATER THAN 100 CM DBH~~ (Avoidance and Mitigation)

Proposed avoidance and mitigation measures to manage impacts to the Tasmanian Wedge-tailed Eagle, Masked Owl, Tasmanian Devil, Eastern Quoll, Eastern Barred Bandicoot, and Spotted-tailed Quoll, including further details of those measures referenced in section 4.1.4.10 of the referral.

Avoidance

Wedge-tailed eagle - The wedge-tailed eagle nest is not active and likely never has been and may never will be utilised and so there is no impact anticipated.

As there would be no residual impact there would be no significant impact and an offset isn't required.

Mammals - Thirty percent of each residential lot and 90% of the balance lot will be retained and protected under a Part 5 Agreement with the council. This provides a minimum 57% retention of habitat (21 of 37 ha) which is an outstanding outcome for residential subdivision.

This level of retention will allow the site to continue as viable wildlife habitat.

The following elements inside text boxes were provided in the referral. In some cases these prescriptions will be modified due to further information being available.

Tasmanian devil and quolls

Car strikes - Mitigation against an increase in car strikes can be achieved through speed control but the efficacy on Ecclestone Road is not known. Reduced traffic speed is an effective measure in mitigating roadkill due to existing traffic and can be done using speed humps on the new proposed road or road limits. Additional local traffic such as generated by the proposal is likely to travel slower than the existing through traffic.

Den protection - Although no dens were located in the proposed impact area these can be difficult to locate. The following mitigation for this species is based upon the Natural and Cultural Heritage Division 2015 *Survey Guidelines and Management Advice for Development Proposals that may impact on the Tasmanian Devil (Sarcophilus harrisii)* and should include:

- a dedicated pre-clearance survey for dens in line with state guidelines.
- a 50 m exclusion zone around potential dens that warrant an assessment.
- A den assessments that includes a combination of expert inspection and camera monitoring.
- Den decommissioning (if applicable for nonactive dens) to reduce direct impact on devils. This will require a permit under the *Nature Conservation Act 2002*.

¹ Forest Practices Authority (2016) *Fauna Technical Note No. 17: Identifying Masked owl habitat*. Forest Practices Authority. Hobart, Tasmania.

- Den monitoring (if applicable for active dens) to determine use of den (*i.e.* use of other species such as wombats, use of pouch-laden devils, use of shelter for adult devils).

Minimisation

Car strikes (Roadkill)

The traffic study summarised above demonstrates a substantial increase in traffic. However, it predicts that 90% of the traffic will be during the peak hrs. The peak hrs are outside of the high risk period except during the evening peak during winter between 5 and 6 pm.

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Offset

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Den protection

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Eastern Barred Bandicoot

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- Signage around the retention area should be erected to state the importance of retention area as a 'wildlife refuge' for the above species with emphasis on keeping cats and dogs confined to their properties.
- The retention area should have a 'no dogs allowed' sign

Masked owl

Avoidance - All hollow bearing trees that occur in the protected areas or outside of building areas will be retained. This is a minimum of 5 of 6 trees.

Minimisation - The sixth hollow bearing tree may need to be removed due to its location on or near the proposed road. It will be inspected by an owl nest expert before clearance. If the hollow is not a nesting hollow it will be covered and the tree removed. If it is a nest tree it will be protected (after examination on 3 occasions there is no sign evidence that the tree is a nest tree).

Information on the protection of masked owls by controlling the use of rodent poisons will be included in the Management plan attendant to the Part 5 Agreement.

These avoidance and mitigation actions supplement those reported in the referral (below)

Tasmanian masked owl

The site is suitable for masked owl and six trees with hollows potentially suitable for masked owl were recorded in the proposal area. Of these trees, one is in the proposed development impact area. To manage any potential risk to the species this tree should be:

- buffered with a 50 m exclusion zone.
- if this cannot be achieved, then all hollows should be checked for nests prior to removal.
- trees with active nests must be protected with a 50 m exclusion zone and realignment should be proposed.
- tree hollows without nests must be blocked prior to removal.
- New homeowners should be given a letter box drop with information discussing the impacts of baiting rodents on owls and other raptor species

Offset

As no nest is present there will be no significant impact and an offset isn't required.

Attachment 1).

With this pattern of territorial utilisation owls may not visit parts of the less productive parts of their territory very often. However, they may visit from time to time and importantly can be attracted there by playing recorded owl calls. So although using call play back is a useful investigative method the detection of owls by this methods does not imply a nest is nearby because the bird may have come to the site or the call from some distance away.

Methods

Call playback

Masked owl call playback surveys were conducted over three nights in November (02/11, 03/11 and 21/11). The weather over the three nights was clear with little to no wind, making ideal survey conditions for detecting owl presence (Attachment 2).

At last light the observer began listening for unelicited calls for one hour in silence while moving quietly between the identified potential habitat trees. Records of this nature are evidence that an owl is present and may be near a roost or nest hollow. Repeating this process and gaining the same response or lack of provides confidence in the result.

After one hour, if no calls were heard, masked owl calls were broadcast via a portable Bluetooth speaker for approximately five minutes. During this time the observer watched for silhouettes and listened for birds landing in proximity of the speaker. After 5 minutes the audio was stopped, and the observer listened a further 5 minutes in silence. If no owl activity was observed, the audio was rebroadcast a further two more times with additional torchlight used to scan nearby trees for perched owls.

The above process was conducted in five locations illustrated in Figure 3..

The placement of a song meter to record calls over a longer period provides further evidence of the timing and frequency of calls. One song meter was placed in the centre of the development area on February 10th and collected after 18 nights of recording including 90 hrs of recording around dusk and dawn.

Song meter recording

A song meter (Wildlife Acoustics SM4 acoustic recorder) was installed post hoc within the development area (Figure 3).

The device was programmed to record all night including during optimal masked owl call periods of pre dawn and post dusk. This follows the survey methodology recommended by Todd². The audio recordings are stored as wave (.wav) files using a 48 kHz sampling rate to cover the maximum frequency of the call of the Tasmanian masked owl.

The recordings were manually assessed and all calls within the characteristic signatures of masked owl analysed and verified by experienced ecologists..

The methods described above are not detailed in the departments survey guidelines but are industry best practice.

Hollow inspection

The entire site was searched for trees with potentially suitable hollows. This included reconsideration of the trees previously reported (Attachment 1). A few additional trees were identified and characterised by species, dbh and hollow dimensions as well as inspection for sign evidence. Each was assessed for sign evidence and potential to hold a nest chamber.

A masked owl expert and tree climber inspected all hollows in all suitable trees in May 2023.

² Todd 2012

Results and Discussion

Listening and call back

The results of the listening and call back survey are tabulated in Table 1. No unelicited calls between 20:30 and 22:15 were recorded. Two call playback responses were recorded from survey locations 2 and 5. The lack of unelicited responses on all nights does not exclude the possibility that an owl is present at the time but an unelicited call strongly suggests roosting or nesting is present. The lack of unelicited calls provides some evidence that no owls are roosting or breeding at the site. The call playback responses prove an owl was present on the site after 1 to 1.5 hrs after the survey began. The responses were 10 and 2 minutes after call back began suggesting that the owl was nearby during the call playback survey period but may have entered the site from elsewhere.

The estimated locations of the calls include 1 from the balance lot and the other from the north of the development area (Figure 3).

All trees previously recorded as having potentially suitable hollows for owl nests or roosts were visited the morning after the surveys. Each was closely inspected for sign evidence and each was struck hard in an attempt to flush an owl. No evidence of occupation was observed. It can be asserted with a high degree of confidence that these trees are not currently utilised by owls (See Hollow Inspection Results below).

Table 1. The timing and results of unelicited and call back surveys

DATE	START SURVEY (TIME)	UNELICITED CALLS	ELICITED CALLS	TIME OF CALL	SITE OF CALL	END SURVEY (TIME)	COMMENTS
02/11/2022	20:30	No	No	N/A	N/A	22:30	Tawny frogmouths and southern boobook observed (Plate 2)
03/11/2022	20:30	No	Yes	21:13	2	22:30	Each call event consisted of 2-3 separate 'screeches' followed by ~30 seconds to a minute of silence for a total of four times before going silent. Recorded after ~10 minutes of playback Tawny frogmouths and southern boobook observed
21/11/2022	20:45	No	Yes	22:15	5	23:15	Two short 'screeches'. 30 seconds of silence between each screech. After ~2 minutes of playback
22/11/2022	03:30	No	No	N/A	N/A	05:30	No owl activity recorded

Song Meter Results

The song meter recordings were analysed manually. Only calls for which we have a high degree of confidence that they are Masked owl calls are reported. Other "screech" calls were either attributed to brush-tailed possums of an uncertain category. The details of positive Masked owl recordings are tabulated in Table 2. The distant calls may emanate from outside of the disturbance footprint. The close calls are likely to be from the site.

Calls from owls leaving a roost tree or returning to it are most likely to occur within 1 hr after dusk (20:45) and within 1 hr before dawn (6:05) (David Young Pers. Comm). Calls outside of these times that are close could be owls from elsewhere foraging on the site. The only two close calls were on February 17th at night time and around dawn on February 18th; most other calls were around dusk. These periods may indicate that most calls were from near roost or nest trees. We have no directional data.

These data indicate the site is within the range of a pair of Masked owls with the frequency of calls suggesting relatively frequent use of the area. However, our investigation of hollow bearing trees found no evidence of utilisation by owls.

Hollow Inspection Results

The tree hollow investigations for Masked owl use found that no hollow had any evidence of current or recent use by Masked owls (Attachment 3). Some of the trees previously identified for their potential were not suitable. Ducks and brush-tailed possums were found to occupy 3 hollows. Figure 3 illustrates the distribution of hollow bearing trees and their potential to be used for a nest.

Table 2. Date, time and estimated relative distance of masked owl calls recorded on a song meter –
 Period 1.5 hrs pre dawn (6:30) or after dusk (21:15).

Date	Time	Relative distance	Period
14/02/2023	5:10	distant	Dawn
17/02/2023	4:38	close	Night
17/02/2023	22:25	distant	Dusk
18/02/2023	5:09	very close	Dawn
21/02/2023	21:45	distant	Dusk
22/02/2023	21:49	distant	Dusk
22/02/2023	21:55	mid distance	Dusk
23/02/2023	21:06	distant	Dusk

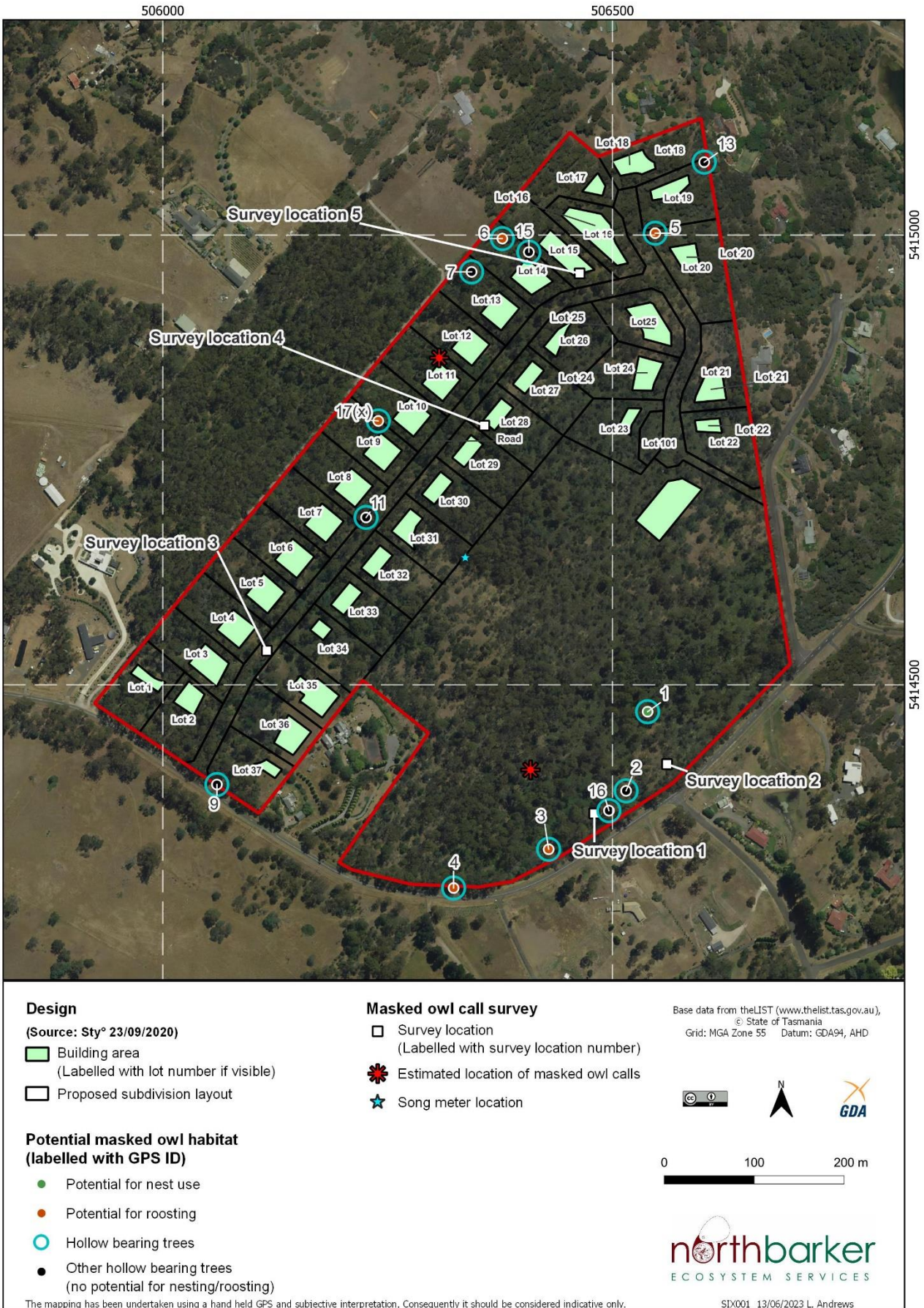


Figure 3. The location of survey locations, hollow bearing trees, the song meter and estimated location of Masked owl call responses

5. Traffic Assessment

A comprehensive assessment of potential traffic impacts on the following species

Tasmanian Devil (*Sarcophilus harrisii*)

Eastern Quoll (*Dasyurus viverrinus*)

Eastern Barred Bandicoot (Tasmanian) (*Perameles gunnii gunnii*)

Spotted-tail Quoll (Tasmanian) (*Dasyurus maculatus maculatus* (Tasmanian population))

Existing Traffic and roadkills

A detailed assessment of the traffic along Ecclestone Road was completed by the West Tamar Council in July 2022 (Attachment 4). The sample point is along the frontage of the proposed subdivision and measured the number and speed of incoming and outgoing traffic for 1 week.

Table 3 and Table 4 below summarise the number of incoming and outgoing vehicles and their speeds over 1 week in July 2022. The incoming and outgoing numbers are very similar and the average number of vehicles per day is reported as 659 and a total of about 4995 per week.

The tables include daily data indicated by colour code for the hours between about sunset and sunrise which is the period of highest risk for roadkills. The percentage of vehicles counted in this period is about 18% (553 of 2329) and 20% (450 of 2266) for incoming and outgoing vehicles respectively.

The speed of vehicles at the 85th percentile is similar across the periods with no significant difference apparent. The average 85th percentile speed is 78 and 80 kph for incoming and outgoing vehicles. That is all vehicle below the 85 percentile travel at an average speed of 78 and 80 kph.

The number of road kills as a result of this traffic is not known precisely. Three roadkills of the relevant animals including 1 Spotted-tailed quoll and 2 Tasmanian devils have been reported between 2012 and 2021 on the LIST database. Two of these occurred along the frontage of the proposed subdivision and the other 1.5 km beyond the frontage toward Launceston. No roadkill records of Eastern barred bandicoot or Eastern quoll have been reported.

Predicted traffic and roadkills

The predicted additional vehicle trips per day estimated to be generated by the completed subdivision is 324, this assumes 9 vehicle movements per house per day (this is a high estimate for a subdivision of this type). The report predicts that 90 % of these trips will be in the peak hrs which adds 50% to the current flow. This is reasonable because the residential subdivision may have different work profiles to the rural trips through residents working in Launceston rather than in rural areas. If peak hours are 8-9am and 5-6 pm then this includes about 33 vph additional to the 73 vph on Ecclestone road peak hr reported. In summer these are very low risk times. In winter the 5-6 peak is a high risk time and so effectively just 33 vph will travel the road during this period.

The length of the frontage and Ecclestone Road to the built up area (houses on both sides of the road) to the east is about 1.5 km. It is this stretch where traffic generated by the subdivision is at highest risk of contributing to roadkill.

The speed of the subdivision traffic along the frontage of the subdivision will be lower than the passing traffic because outgoing traffic will enter Ecclestone road at low speed and incoming traffic will slow well before the access road to leave Ecclestone road.

Figure 4 illustrates the distribution of recorded roadkills of Tasmanian devils and quolls between 2009 and 2021. It is apparent that the density of roadkills is highest on the main roads with highest speed limits. On Ecclestone road the relatively low speeds and the reasoning reported may be reflected in the relatively sparse roadkill records along this stretch.

While there is no doubt an increase in traffic increases the risk of road kill it is well known that road kill frequency is reduced dramatically below 60 km phr. In this case all of the traffic generated by the subdivision will spend a relatively higher portion of the time traveling along the bushland frontage below 60 km phr.

With mitigation through the provision of information to the residents and roadside wildlife warning signs and the maintenance of a cleared roadside the risk from the local traffic will be minimal. This mitigation will also influence the existing drivers and so may generate a net reduction in roadkill events along this section of road.

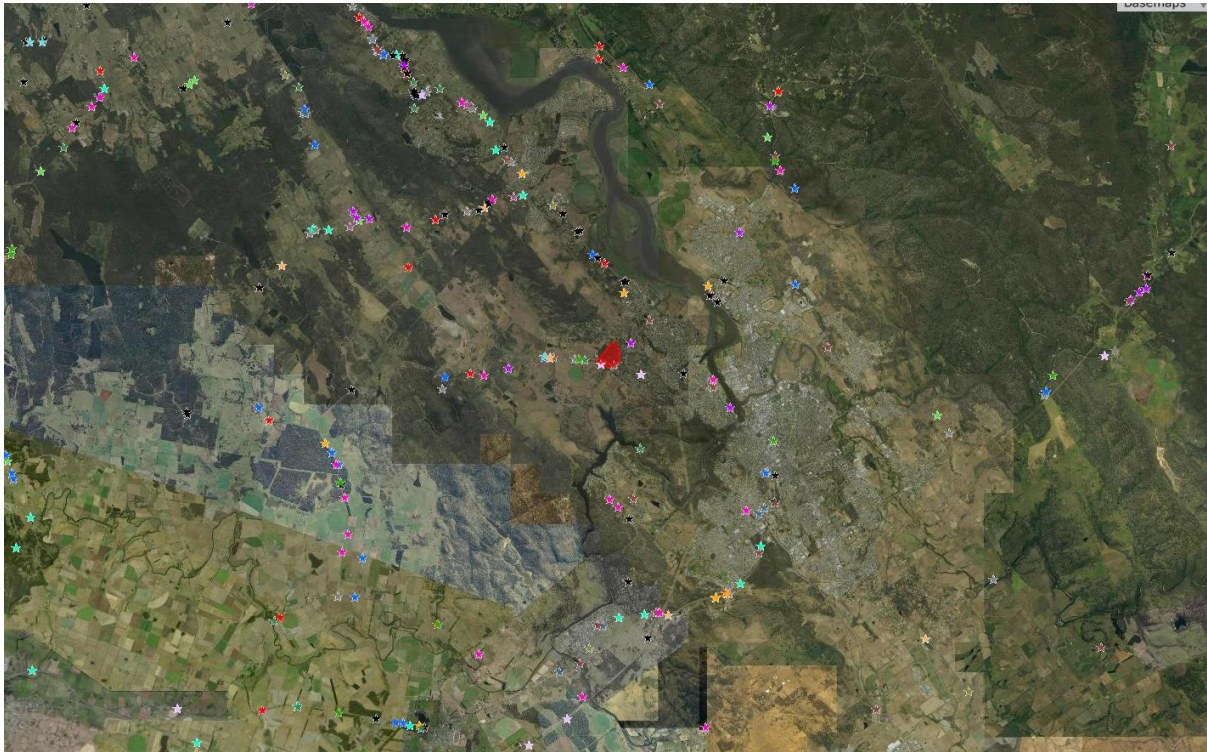


Figure 4. The distribution of recorded roadkills of Tasmanian devils and quolls between 2009 and 2021 (years colour coded). Site marked as red in the centre

Table 3. Summary of the count and 85th percentile speed of vehicles for each day of the week

INCOMING	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour								Day Avg	Avg	Avg Speed
0 - 1	0	*	0	0	0	1	0	0	0.5	0
1 - 2	1	2	2	2	0	0	0	1.4	0	74.25
2 - 3	0	0	0	0	0	0	2	0	1	0
3 - 4	1	0	0	0	1	0	0	0.4	0	73
4 - 5	1	1	2	1	2	0	1	1.4	0.5	89.8
5 - 6	3	1	2	4	1	0	0	2.2	0	75.8
6 - 7	19	24	22	21	22	2	0	21.6	1	86.36
7 - 8	26	24	23	19	15	3	4	21.4	3.5	84.3
8 - 9	35	33	25	20	27	19	9	28	14	85.7
9 - 10	21	24	17	30	14	24	15	21.2	19.5	82.96
10 - 11	16	18	29	15	22	28	21	20	24.5	80.2
11 - 12	21	22	17	20	20	31	21	20	26	79.36
12 - 13	33	31	30	26	37	41	20	31.4	30.5	79.56
13 - 14	27	31	53	43	49	84	25	40.6	54.5	78.6
14 - 15	26	37	43	36	49	31	15	38.2	23	78
15 - 16	23	46	39	43	40	37	19	38.2	28	82.6
16 - 17	25	31	27	20	24	26	17	25.4	21.5	81.4
17 - 18	28	24	24	19	24	17	6	23.8	11.5	81.8
18 - 19	5	6	11	9	16	11	4	9.4	7.5	82
19 - 20	4	0	1	7	3	7	1	3	4	82.25
20 - 21	1	1	3	4	4	6	1	2.6	3.5	70.4
21 - 22	1	3	3	2	4	0	0	2.6	0	85.2
22 - 23	3	2	4	2	4	0	1	3	0.5	72.6
23 - 24	0	0	0	0	0	0	0	0	0	0
Totals	320	361	377	343	378	368	182			
% of Total	13.74%	15.50%	16.19%	14.73%	16.23%	15.80%	7.81%			

OUTGOING	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour								Day Avg	Avg	Avg Speed
0 - 1	0	1	0	1	0	3	1	0.4	2	71.5
1 - 2	0	1	1	0	0	1	0	0.4	0.5	69.5
2 - 3	0	0	0	0	0	0	1	0	0.5	0
3 - 4	0	0	0	0	0	0	2	0	1	0
4 - 5	1	0	0	0	0	0	0	0.2	0	48
5 - 6	1	0	1	0	0	0	0	0.4	0	53
6 - 7	3	6	3	1	4	3	0	3.4	1.5	94.6
7 - 8	13	16	13	18	12	6	3	14.4	4.5	83.9
8 - 9	19	16	22	19	7	11	5	16.6	8	85.4
9 - 10	18	27	18	20	19	27	28	20.4	27.5	80.3
10 - 11	39	49	41	37	57	60	11	44.6	35.5	76.6
11 - 12	29	30	41	45	42	58	28	37.4	43	77.7
12 - 13	23	27	44	30	37	41	27	32.2	34	77.26
13 - 14	28	22	20	27	40	40	24	27.4	32	79.5
14 - 15	26	23	19	20	18	30	17	21.2	23.5	81.7
15 - 16	24	31	24	37	28	18	14	28.8	16	81.7
16 - 17	25	40	39	47	40	25	16	38.2	20.5	81.4
17 - 18	22	24	24	20	22	5	10	22.4	7.5	81.5
18 - 19	17	15	7	16	17	5	4	14.4	4.5	84.2
19 - 20	6	6	8	7	5	3	3	6.4	3	80.76
20 - 21	2	3	2	9	6	2	1	4.4	1.5	82.2
21 - 22	5	4	6	3	4	6	3	4.4	4.5	72.4
22 - 23	3	3	6	2	4	8	2	3.6	5	85.1
23 - 24	2	0	0	1	0	2	1	0.6	1.5	92.5
Totals	306	344	339	360	362	354	201			
% of Total	13.50%	15.18%	14.96%	15.89%	15.98%	15.62%	8.87%			

Table 4. Weekly average speeds of incoming traffic and the 85th percentile speed colours indicating approx.. sunrise and sunset

INCOMING	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour								Day Avg	Avg	Avg Speed
0 - 1	0	*	0	0	0	53	0	0	53	0
1 - 2	74	71.5	75	74.5	0	0	0	73.71	0	74.25
2 - 3	0	0	0	0	0	0	72.5	0	72.5	0
3 - 4	67	0	0	0	79	0	0	73	0	73
4 - 5	72	92	86	99	89	0	50	87.57	50	89.8
5 - 6	60.67	84	51.5	79.75	62	0	0	68.18	0	75.8
6 - 7	82.42	77.25	77.77	79.19	81.68	82.5	0	79.55	82.5	86.36
7 - 8	77.42	73	75.22	75.58	74.6	71.33	69.25	75.23	70.14	84.3
8 - 9	75.46	67.82	70.44	77.75	77.85	70.32	71.33	73.55	70.64	85.7
9 - 10	71.86	77.29	66.76	74.37	76.71	75.12	74.33	73.62	74.82	82.96
10 - 11	70.44	70.72	69.41	69.27	70.41	76.43	77.05	70.01	76.69	80.2
11 - 12	70.43	68.82	69.18	70.9	71.05	73.52	72.19	70.08	72.98	79.36
12 - 13	74.15	66.45	70.87	70.04	72.16	72.24	77.25	70.85	73.89	79.56
13 - 14	69.56	69.58	68.43	71.21	71.98	71.08	70.76	70.2	71.01	78.6
14 - 15	72.85	69.81	66.63	72.28	70.73	71.39	68.67	70.21	70.5	78
15 - 16	74.65	69.93	71.1	71.88	72.6	70.62	71.89	71.74	71.05	82.6
16 - 17	74.56	68.23	73.59	74.45	75.75	63.69	70.71	73.02	66.47	81.4
17 - 18	73.21	76.25	70.92	73.63	74.17	71.71	67.67	73.62	70.65	81.8
18 - 19	74	70	81	80.33	77.94	81.09	70.25	77.68	78.2	82
19 - 20	74.5	0	84	77.43	74	74.71	61	76.4	73	82.25
20 - 21	69	61	64.67	69.75	70	65.5	46	67.92	62.71	70.4
21 - 22	80	78.33	91.33	72.5	69	0	0	77.69	0	85.2
22 - 23	75.67	73.5	65.25	63.5	64.75	0	73	68.07	73	72.6
23 - 24	0	0	0	0	0	0	0	0	0	0

OUTGOING	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour								Day Avg	Avg	Avg Speed
0 - 1	0	74	0	69	0	62	44	71.5	57.5	71.5
1 - 2	0	73	66	0	0	75	0	69.5	75	69.5
2 - 3	0	0	0	0	0	0	67	0	67	0
3 - 4	0	0	0	0	0	0	54.5	0	54.5	0
4 - 5	48	0	0	0	0	0	0	48	0	48
5 - 6	66	0	40	0	0	0	0	53	0	53
6 - 7	84.33	77	75.33	101	86.25	81.67	0	81.59	81.67	94.6
7 - 8	73.54	68.44	74.77	77.78	72.67	67	75.67	73.54	69.89	83.9
8 - 9	74.68	73.5	65.86	78.68	70.14	70.64	62.4	72.65	68.06	85.4
9 - 10	62.44	71.59	69.17	68.1	73.53	71.93	74.46	69.23	73.22	80.3
10 - 11	68.31	69.39	66.15	71.57	71.39	72.12	70	69.48	71.79	76.6
11 - 12	70	67.23	68	71.04	72.79	71.09	75.86	69.99	72.64	77.7
12 - 13	68.78	66.44	71.55	71.7	69.22	70.07	75.63	69.79	72.28	77.26
13 - 14	74	66.77	68.9	69.89	71.22	69.35	74.79	70.47	71.39	79.5
14 - 15	67.85	65.57	66.26	73.85	72.61	73.2	69.24	69.01	71.77	81.7
15 - 16	76.38	68.87	71.71	73.62	70.32	65.83	73.43	72.1	69.16	81.7
16 - 17	75.52	66.88	74.67	68.98	75.05	68.12	68.62	71.83	68.32	81.4
17 - 18	73.95	75.12	70.5	76.6	71.32	76.6	64.7	73.42	68.67	81.5
18 - 19	69.47	73.8	76.71	75.94	74.53	72.6	67	73.71	70.11	84.2
19 - 20	75	69.5	80.12	76.86	59.2	77.33	71.33	73.19	74.33	80.76
20 - 21	85.5	61.67	79	79.56	79.5	73	65	77.59	70.33	82.2
21 - 22	72.8	68.5	79.5	57.33	65.75	76.17	63.67	70.45	72	72.4
22 - 23	60.67	78.33	84	82	75.25	73.38	71	77	72.9	85.1
23 - 24	70.5	0	0	94	0	75.5	67	78.33	72.67	92.5

6. Avoidance and Mitigation

Proposed avoidance and mitigation measures to manage impacts to the Tasmanian Wedge-tailed Eagle, Masked Owl, Tasmanian Devil, Eastern Quoll, Eastern Barred Bandicoot, and Spotted-tailed Quoll, including further details of those measures referenced in section 4.1.4.10 of the referral.

Avoidance

Wedge-tailed eagle - The wedge-tailed eagle nest is not active and likely never has been and may never will be utilised and so there is no impact anticipated.

As there would be no residual impact there would be no significant impact and an offset isn't required.

Mammals - Thirty percent of each residential lot and 90% of the balance lot will be retained and protected under a Part 5 Agreement with the council. This provides a minimum 57% retention of habitat (21 of 37 ha) which is an outstanding outcome for residential subdivision.

This level of retention will allow the site to continue as viable wildlife habitat.

The following elements inside text boxes were provided in the referral. In some cases these prescriptions will be modified due to further information being available.

Tasmanian devil and quolls

Car strikes - Mitigation against an increase in car strikes can be achieved through speed control but the efficacy on Ecclestone Road is not known. Reduced traffic speed is an effective measure in mitigating roadkill due to existing traffic and can be done using speed humps on the new proposed road or road limits. Additional local traffic such as generated by the proposal is likely to travel slower than the existing through traffic.

Den protection - Although no dens were located in the proposed impact area these can be difficult to locate. The following mitigation for this species is based upon the Natural and Cultural Heritage Division 2015 *Survey Guidelines and Management Advice for Development Proposals that may impact on the Tasmanian Devil (Sarcophilus harrisii)* and should include:

- a dedicated pre-clearance survey for dens in line with state guidelines.
- a 50 m exclusion zone around potential dens that warrant an assessment.
- A den assessments that includes a combination of expert inspection and camera monitoring.
- Den decommissioning (if applicable for nonactive dens) to reduce direct impact on devils. This will require a permit under the *Nature Conservation Act 2002*.
- Den monitoring (if applicable for active dens) to determine use of den (*i.e.* use of other species such as wombats, use of pouch-laden devils, use of shelter for adult devils).

Minimisation

Car strikes (Roadkill)

The traffic study summarised above demonstrates and substantial increase in traffic. However, it predicts that 90% of the traffic will be during the peak hrs. The peak hrs are outside of the high risk period except during the evening peak during winter between 5 and 6 pm.

Speed control – the Part 5 Agreement will include information on animal protection. In this case it will provide information on the risk of roadkill and the mitigating factors. This will include high risk times, speed and visibility and caution.

Wildlife warning signs will be placed at each end of the site on Ecclestone Road to alert all road users including existing users. It is anticipated that this will modify the behaviour of existing road users and so reduce the risk and incidence of roadkill..

The roadside vegetation will be maintained at a low height in the road reserve between the seal and the boundary fence to improve visibility of animals to all road users.

Council is party to the development of the subdivision and the Part 5 Agreement will include reference to the councils commitment to the collection of roadkill of all animals to minimise the risk of scavenging carcasses attracting devils and quolls and so leading to animals being killed.

With mitigation through the provision of information and the practical elements above the risk from the local traffic will be minimal. This mitigation will also influence the existing drivers and so may generate a net reduction in roadkill events along this section of road.

Offset

As there would be no residual impact there would be no significant impact and an offset isn't required.

Den protection

Den searches are undertaken along notionally parallel transects at a maximum of 30 m apart. All structures potentially suitable for dens are inspected and potential dens recorded. All potential dens in the impact area are photo monitored for activity. All dens on the reserved land will be protected. The probability of den occurrence is highest in the land to be protected on the balance lot due to its greater vegetative cover and structures for den opportunities.

Den decommissioning - Where a den is required to be decommissioned it is first monitored with cameras for 1 week. This will indicate if the den is in use by a devil or any other fauna. For dens that have an breeding female devil or other fauna evidenced by repeated observations it will be assumed to be a natal den and the den will be protected with a 50 m buffer until the activity ceases. Once breeding activity ceases a one way gate will be fitted and monitored until all fauna have left the den and cannot re-enter. The den will only then be decommissioned.

Education and regulation

The retention area will have a Part 5 Agreement on title. The Part 5 Agreement will have an attendant management plan; The management plan will emphasise the importance of the retention area and detail land owner obligations and provide information in relation to:

- Habitat protection
- Fire management
- Weed management
- Pest control
- Cat and dog control
- Animal identification

Eastern Barred Bandicoot

The development will not have a significant direct impact on this species, although the increase in houses may result in an increase in dogs and cats.

- Signage around the retention area should be erected to state the importance of retention area as a 'wildlife refuge' for the above species with emphasis on keeping cats and dogs confined to their properties.

- The retention area should have a 'no dogs allowed' sign

Masked owl

Avoidance - All hollow bearing trees that occur in the protected areas or outside of building areas will be retained. This is a minimum of 5 of 6 trees.

Minimisation - The sixth hollow bearing tree may need to be removed due to its location on or near the proposed road. It will be inspected by an owl nest expert before clearance. If the hollow is not a nesting hollow it will be covered and the tree removed. If it is a nest tree it will be protected (after examination on 3 occasions there is no sign evidence that the tree is a nest tree).

Information on the protection of masked owls by controlling the use of rodent poisons will be included in the Management plan attendant to the Part 5 Agreement.

These avoidance and mitigation actions supplement those reported in the referral (below)

Tasmanian masked owl

The site is suitable for masked owl and six trees with hollows potentially suitable for masked owl were recorded in the proposal area. Of these trees, one is in the proposed development impact area. To manage any potential risk to the species this tree should be:

- buffered with a 50 m exclusion zone.
- if this cannot be achieved, then all hollows should be checked for nests prior to removal.
- trees with active nests must be protected with a 50 m exclusion zone and realignment should be proposed.
- tree hollows without nests must be blocked prior to removal.
- New homeowners should be given a letter box drop with information discussing the impacts of baiting rodents on owls and other raptor species

Offset

As no nest is present there will be no significant impact and an offset isn't required.

Attachment 1 NBES Natural Values Assessment 2022

Attachment 2 Ecclestone Rd Subdivision – Wedge-tailed-eagle nest and masked owl RFI assessment

Attachment 3 Ecclestone Rd Subdivision – Tree hollow investigations for Masked owl use

Attachment 4 Traffic Assessment